

REMARKS

Reconsideration of the rejections set forth in the Office Action dated September, 2003 is respectfully requested. Applicants petition the Commissioner for a 2-month extension of time. A separate petition accompanies this amendment. Claims 19-21 are currently under examination.

I. Amendments

Each of the terms "supply," "sample," and "first" were used in claim 19. Each term is used equivalently, however, Applicants have amended claim 19 for consistent terminology.

II. Rejections under 35 U.S.C. §§102(a) and 102(b)

Claim 19 was rejected under 35 U.S.C. §102(b) as allegedly anticipated by Verheggen *et al.* (1988) *Journal of Chromatography*, Vol. 452, pp. 615-622.

These rejections are respectfully traversed for the following reasons.

A. The Present Invention

The invention describes a method of injecting a defined volume of sample into an electrolyte channel in a microfluidics device. The method comprises (i) placing a sample in a sample channel that intersects the electrolyte channel at a supply port, (ii) injecting the sample in the sample channel along a pathway that includes the supply port, a drain port intersecting the electrolyte channel at location axially spaced from the supply port, and a segment of the electrolyte channel between the two ports, where the sample volume is defined as the region of the electrolyte channel extending between and along the two ports, by applying an electric field across the supply channel and a drain channel, (iii) by said injecting, producing a defined sample volume in the electrolyte channel, and (iv) electrokinetically moving the defined sample volume along the electrolyte channel by applying an electric field across a reservoir for the electrolyte buffer and a drain at an opposite end of the electrolyte channel.

B. The Prior Art

VERHEGGEN ET AL. describe a sampling device for capillary isotachopheresis and capillary zone electrophoresis whereby the most essential feature of this device is the direct introduction of the sample solution into a part of the capillary tube by means of two feeders which extend perpendicular to the capillary tube. The arrangement of the two feeders off-set from each other along the longitudinal extension of the capillary tube is such that the sampling device has the shape of a capillary double T structure.

C. Analysis

According to the M.P.E.P. § 2131, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference".

As previously discussed, the September 21, 2000 opinion before the Board of Patent Appeals and Interferences (Appeal No. 1997-3328) in the parent application states, in regard to prior art including Verheggen *et al.*, that "we do not find any prior art recognition of how to provide a geometrically defined sample in an electrophoresis device as described in [the parent application]". Nor does Verheggen *et al.* teach the solution as claimed in the present invention. Verheggen *et al.* fail to teach a method of producing a defined sample volume in the electrolyte channel including applying an electric field across the supply channel and a drain channel. As seen in Figure 1, Verheggen *et al.* include an electrode compartment at each end of the capillary tube where the electrolyte solution in the channel contacts the electrodes. The apparatus further includes a measuring electrode positioned in the capillary tube. With this configuration, an electric field can only be applied across the capillary tube (electrolyte channel) and not across the supply and drain channels as presently claimed.

On page 622, Verheggen *et al.* describe experiments performed with the device shown in Fig. 1, "[i]n a third experiment (Fig. 3c) the sampling was carried out by electromigration, a dilute sample of $5 \cdot 10^{-5}$ M flowing through the SD for 30 s with application of an electrical current." However, as noted above, the application of an electrical current can only be applied across the capillary tube and not the across the supply and drain channels. In fact, Verheggen *et al.* state "no representative aliquot was introduced."

In contrast, the method of the present invention injects a defined sample volume in the electrolyte channel by applying an electric field across the supply channel and a drain channel. This method of providing for a defined sample volume is nowhere shown or suggested in Verheggen *et al.*

Accordingly, as the cited reference fails to teach "each and every element as set forth in the claim," Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §102(b).

Conclusion

In view of the above remarks, Applicants submit that the claims are in condition for allowance. A Notice of Allowance is, therefore, respectfully requested.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned at (650) 838-4410.

Respectfully submitted,



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